as set forth in claim 10. Specifically, the quotient of $\Delta/(L/2)$ must be unitless in order for the equation to be solved for θ (the angle of deflection). Since L has distance or linear units associated therewith, Δ must also have distance or linear units associated therewith.

Responsive to the rejection of claims 1-3, 5-10, 12-14, and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over Proceq SA-Wire tension meter in view of U.S. Patent No. 4,423,639 (Grade et al), Applicant has amended claims 1, 8, and 10 and submits that claims 1-3, 5-10, 12-14, and 16-18 are now in condition for allowance.

Claim 1, as amended, recites in part:

> a linear deflection measuring means on said frame, for measuring the linear deflection of the stressed cable.

Similarly, claim 8, as amended, recites in part:

> measuring the linear deflection of the stressed cable.

Meanwhile, claim 10, as amended, recites in part:

> calculating the amount of stress in the stressed cable using a measured amount of linear deflection...

Applicant submits that the invention as set forth in each of claims 1, 8, and 10 is neither taught, disclosed, nor suggested by Proseq SA-Wire tension meter, Grade et al '639, or any of the other cited references, alone or in combination.

Proseq SA-Wire tension meter discloses wire tension meters that measure the tensile force in highly stressed steel wires or strands.

As seen from the same display shown on the first page of the reference, such force is typically displayed in terms of kilonewtons (kN) of force. The reference does not disclose or suggest that the wire tension meter is configured or even capable of calculating and displaying the amount of linear displacement associated with the placement of a wire or strand under tension. Thus, Proceq SA-Wire tension meter fails to teach or suggest the present invention as set forth in each of amended claims 1, 8, and 10.

Grade et al '639 discloses an apparatus for adjusting and indicating the tension in a guy line (Figs. 2 and 3). The apparatus measures and indicates the tension in the guy line in terms of units of force (i.e., pounds X 1000). Guy line tension adjustor and indicator 10 includes a hydraulic compression load cell 12 with an associated pressure gauge 22. As shown in Fig. 3, pressure gauge 22 is displayed in units of tension. Grade et al '639 does not disclose or suggest tension indicator 10 to be capable of measuring and displaying an amount of linear displacement associated with placing the guy wire associated therewith under tension. Accordingly, Grade et al '639 does not suggest the present invention as set forth in each of amended claims 1, 8, and 10.

Of importance to note is that an amount of linear deflection includes only a linear component, while a tension measurement includes a force component. As such, tension and linear deflection are two distinctly different quantities measured in distinctly different ways.

For all the foregoing reasons, Applicant submits that 1, 8, and 10, and those claims depending therefrom, are now in condition for allowance and hereby respectively request that the rejection thereof based upon Proceq SA-Wire tension meter in view of Grade et al '639 be withdrawn.

Responsive to the rejection of claims 1-3, 5-10, 12-14 and 16-18 under 35, U.S.C. §103(a) as being unpatentable over U.S. Patent No. 3,174,334 (McKernan) in view of U.S. Patent No. 3,653,258 (King), Applicant has amended claims 1, 8, and 10 and submits that claim 1-3, 5-10, 12-14, and 16-18 are now in condition for allowance.

Claim 1, as amended, recites in part:

> a linear deflection measuring means on said frame, for measuring the linear deflection of the stressed cable.

Similarly, claim 8, as amended, recites in part:

> measuring the linear deflection of the stressed cable.

Meanwhile, claim 10, as amended, recites in part:

> calculating the amount of stress in the stressed cable using a measured amount of linear deflection...

Applicant submits that such an invention as set forth in each of claims 1, 8, and 10 is neither taught, disclosed, nor suggested by McKernan, King, or any of the other cited references, alone or in combination.

McKernan '334 discloses two embodiments of a cable tensiometer (Figs. 1-4; Figs. 7-11). When it is desired to determine the

absolute tension on a cable, the second embodiment, shown in Figs, 7-11, is preferably utilized, although the embodiment shown in Figs. 1-4 can be also be used to determine absolute tension if a properly calibrated scale 74 is employed. In the second embodiment scales 292 on card 286 are calibrated to record absolute tension on cables of different diameters. In the use of the tensiometer illustrated in Figs 7-11, deflection of arm 252 is proportional to the tension of cable 218 and, since card 286 is calibrated in units of absolute tension, the marking of card 286 by plunger 294 thus indicates the absolute tension on cable 218. As disclosed in column 5, lines 28-56, the tensiometer of Figs. 7-11 can be used in determining the weight of an object, such as a passenger elevator. However, McKernan '334 does not disclose or suggest configuring the tensiometer to measure and/or display the amount of linear deflection associated with a cable 218 once placed under tension. Therefore, McKernan '334 fails to teach or suggest the present invention as set forth in amended claims 1, 8 and 10.

King discloses an apparatus for measuring loads on ropes and/or cables. The apparatus is configured for imposing the strain on a beam 2 through deflection of the rope 1, the strain on the beam being proportioned to the loading in rope 1. The distortion of the beam 2, measured by the dial gauge 11 or the bridge circuit incorporating the strain gauges 12, represents the loading in the rope 1. As such, the apparatus measures the deflection of the beam and not the rope and converts this beam deflection measurement into a measurement of the force associated with rope 1. Accordingly,

King '258 does not disclose or suggest the linear displacement that occurs within rope 1. Therefore, King '258 fails to teach or suggest the present invention as set forth in each of amended claims 1, 8, and 10.

For all the foregoing reasons, Applicant submits that claims 1, 8, and 10, and those claims depending therefrom, are now in condition for allowance and hereby respectfully request that the rejection thereof based upon McKernan in view of king be withdrawn.

If the Examiner has any questions or comments that would speed prosecution of this case, the Examiner is invited to call the undersigned at 260/485-6001.

Respectfully submitted,

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JTK/ste

Encs: Replacement Claims
Marked-up Claims
Petition for Extension of Time
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Hon. Commissioner of Patents and Trademarks, Washington, D.C. 20231, on: November 21, 2002 .

Jeffrey T. Knapp, Regis. No. 45,384
Name of Registered Representative

Signature

November 21, 2002
Date

REPLACEMENT CLAIMS

Please replace claim 1 with the following:

1. A device for measuring the tension in stressed cables, said device comprising:

a frame having a pair of ends adapted to engage a said stressed cable;

a hydraulic jack mounted on said frame between its ends for applying a force on the stressed cable; and

a linear deflection measuring means on said frame, for measuring the linear deflection of the stressed cable.

Please replace claim 8 with the following:

8. A method of detecting the amount of tension in a stressed cable, said method including the following steps:

supporting the stressed cable at a selected pair of spaced apart points;

applying a force utilizing a hydraulic jack to the stressed cable sufficient to deflect the cable relative to said supported points; and

measuring the linear deflection of the stressed cable.

Please replace claim 10 with the following:

10. A method of detecting the amount of tension in a stressed cable, said method including the following step: calculating the amount of stress in the stressed cable using a measured amount of linear deflection, by applying the following equation:

$$T = \frac{F}{2\sin\theta} \quad where \quad \theta = \tan^{-1}\frac{\Delta}{L/2}$$

wherein the variable "L" refers to the distance between the spaced apart points of the stressed cable, "Δ" refers to the deflection, and "θ" refers to the angle of deflection.

MARKED-UP CLAIMS

Please amend claim 1 as follows:

1. A device for measuring the tension in stressed cables, said device comprising:

a frame having a pair of ends adapted to engage a said stressed cable;

a hydraulic jack mounted on said frame between its ends for applying a force on the stressed cable; and

a <u>linear deflection</u> measuring means on said frame, for measuring the <u>linear</u> deflection of the stressed cable.

Please amend claim 8 as follows:

8. A method of detecting the amount of tension in a stressed cable, said method including the following steps:

supporting the stressed cable at a selected pair of spaced apart points;

applying a force utilizing a hydraulic jack to the stressed cable sufficient to deflect the cable relative to said supported points; and

measuring the <u>linear</u> deflection of the stressed cable.

9. A method as defined in Claim 8 wherein the force that is applied to the stressed cable is a known force.

Please amend claim 10 as follows:

10. A method of detecting the amount of tension in a stressed cable, said method including the following step: calculating the amount of stress in the stressed cable using [the] <u>a measured</u> amount of <u>linear</u> deflection, by applying the following equation:

$$T = \frac{F}{2\sin\theta} \quad where \quad \theta = \tan^{-1}\frac{\Delta}{L/2}$$

wherein the variable "L" refers to the distance between [the] spaced apart [point] <u>points of the stressed cable</u>, "Δ" refers to the deflection, and "θ" refers to the angle of deflection.